Short Winter Course

Maryland Agricultural College Bulletin

OCTOBER-DECEMBER, 1905

Vol. 2 No. 2

THE MARYLAND AGRICULTURAL COLLEGE

COLLEGE PARK, MARYLAND

ISSUED QUARTERLY

Entered at College Park, Md., as second-class matter under Act of Congress, July 16, 1894.

INTRODUCTION.

MARYLAND AGRICULTURAL COLLEGE, *November*, 1905.

In presenting you the following bulletin, I wish to call your attention to the importance of the principles there outlined. As a practical dairyman, have you not found your actual experience verified by Mr. Porter's statement of facts?

Again, if you are not a dairyman, by vocation, but simply the owner of one cow for your family, is it not worth your while to know enough about the selection of a cow to make it certain when the selection is made that you have secured an animal which will give you profitable returns for your investment? Again, the cow, no matter how perfect a type she may be for milk production, cannot do her work unless she is provided with the raw material from which milk and butter can be profitably made. A good cow poorly fed, or a poor cow well fed, represent investments which produce no income.

The same may be said of every branch of the Live Stock industry on the farm. We need much more knowledge concerning the scientific principles which must direct in all of our operations on the farm, if we are to receive any returns commensurate with the efforts which we make in our daily work on the farm.

In this bulletin, you will find an outline of the Short Winter Course of 10 weeks, for men who cannot spare the time for a longer course. Study it carefully. It means much to you and your son. In the hours given to this work, a man who will devote himself as he should to the course he wishes to pursue, bearing in mind that he should not undertake too much, will, at the end of ten weeks, find himself in possession of an equipment of training which will be of great service to him in his practical operations on the farm. Send for a catalog containing full particulars.

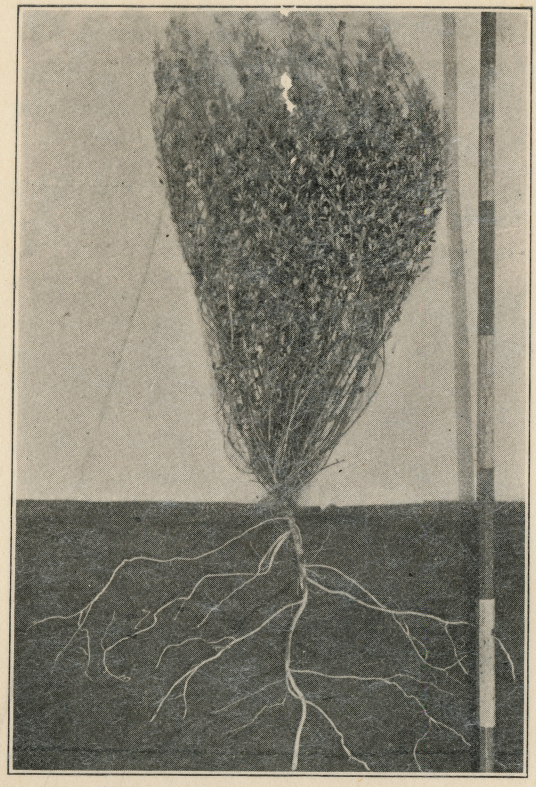
The terms for the ten weeks course are $4.00 per week, payable in two installments. The first payment of $20 on entrance, and

the second payment on February 1, 1906. It is desired to make this Short Winter Course a feature of College work. For earnest men, it will afford an opportunity, which, to be appreciated, must be taken. If you, as the head of the home, cannot come, send your son, for the experience will be valuable to him. We want your College to serve you. You must accept the service, for we cannot enforce it if we would, and we would not if we could.

It will afford us pleasure to open correspondence with you bearing upon the work in this department of our Institution.

Fraternally,

R. W. SILVESTER, *President.*



AN ALFALFA PLANT.

SHORT WINTER COURSE IN AGRICULTURE.

This course will begin on Wednesday, January 10, 1906, and continue ten weeks, to March 27th. It will be open to young men of sixteen years of age and over. The aim of the course will be to give the largest possible amount of information on strictly agricultural topics, by means of lectures, laboratory instruction and practical work in the field, orchard, green-house, stables, creamery, and carpenter and blacksmith shops. It is not a text book course but the students will have the privilege of using the Department

Libraries, and will be encouraged to put in as much of their spare time as possible in reading on subjects connected with their work.

Every student will be required to take not less than two hundred and fifty hours of work. Two hundred of these must be devoted to the following specified studies:

Soils, 22 hours.	*Farm Dairying,* 40 hours.
Manures, 20 hours.	*Plant Production,* 25 hours.
Agricultural Chemistry, 20 hours.	*Farm Live Stock,* 18 hours.
Stock Feeding, 15 hours.	*Horticulture,* 40 hours.

The other fifty hours will be devoted to such topics as the student may elect, after consulting the synopsis of the course as outlined in the following pages:

Terms.

Tuition and room free. Table board will be furnished by the College, at four dollars per week. Students will be expected to furnish their own bedclothes, pillows, towels and napkins and overalls for dairy work. *Short course students are not required to drill or wear uniforms.*

SYNOPSIS OF COURSE.

I.—Soils.—Twenty-two Hours.

PROF. W. T. L. TALIAFERRO.

The examination and classification of soils; the relation of soils to water, air, heat; adaptation of soils to crops; improvement of physical condition of soils; drainage, ventilation, cultivation, green manures, cover crops, rotation of crops.

II.—Manures.—Twenty Hours.

DR. H. B. MCDONNELL.

The best methods of preserving and applying farm manure. The relative value of the different manures and fertilizers. The maintenance of soil fertility. The place of lime in the farm economy.

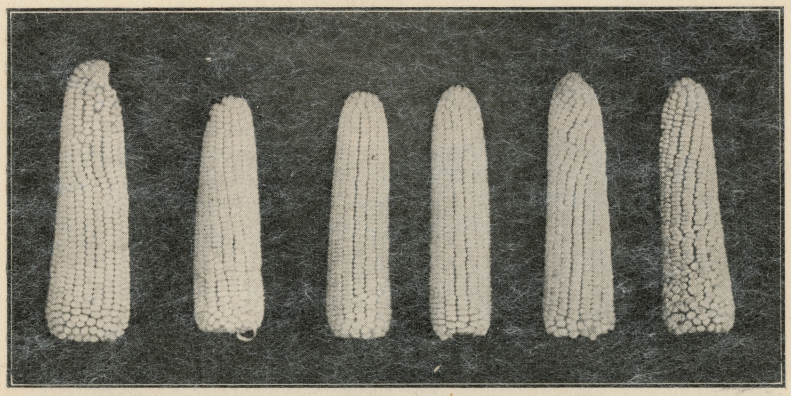
III.—Agricultural Chemistry.—Twenty Hours.

DR. H. B. MCDONNELL and MR. MORGAN.

Soils; their formation, classification and properties. The mineral constituents of soils and their bearing on plant growth. The best means of supplementing them when needed for plant growth.

IV.—Plant Production.—Twenty-five Hours.

PROF. W. T. L. TALIAFERRO.



TYPES OF CORN EARS.

Varieties, improvement, soil requirements, cultivation, planting and harvesting of field crops, including corn, small grains, legumes, grass, silage and soiling crops, potatoes and root crops.

Special attention is given to the growing of alfalfa, cow-peas, and other legumes, and their place in farm economy.

Last spring more than two thousand persons attended the lectures in the Corn Special Trains, run by the Maryland Agricultural Experiment Station, on the Maryland & Pennsylvania, and the Western Maryland Railroads. Very many of these have reported great improvement in their corn crop from putting into practice the lessons of seed-testing taught. Students in this course will be made thoroughly familiar by actual practice with the methods of making germination tests and of selecting seed. They will also be given full

instruction in the principles and practice of breeding corn for improvement in yield and feeding value.

The results which have already been attained in the improvement of corn by systematic selection and breeding are among the most wonderful, as well as most useful, achievements of modern agricultural science. Corn is already the most valuable crop grown in Maryland, its annual value being about seven million dollars. Large as is this sum, there is no doubt that it would be doubled by a general practice among farmers of correct principles of selecting seed and growing the crop.

This is a valuable and thoroughly practical course, and should not be missed by any young man who is engaged, or expects to be engaged, in farming in Maryland.

A SEED CORN GERMINATION TEST.

The covering material has been removed leaving the grains undisturbed in the box. The white roots and sprouts of the germinated grains are seen.

V.—Stock Feeding.—Fifteen Hours.

PROF. H. J. PATTERSON.

The composition and digestibility of the different feeding stuffs, what is meant by a well-balanced ration, and the calculation of such rations with given materials, feeding for maintenance, fat, butter, eggs, wool, milk; the effect of food on quality; the preservation and preparation of coarse fodders; ensilage; steaming and cooking food.

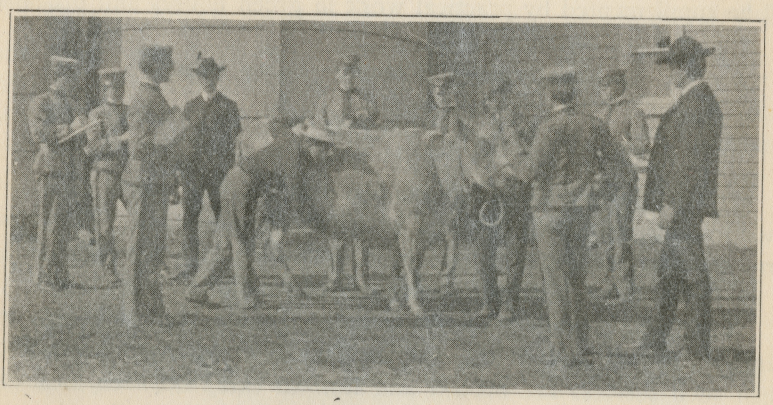
etc., etc. Not only will the theory be studied, but a careful carrying out of the theory in practice will be the features of the course.

VI.—Farm Live Stock.—Eighteen Hours.

MR. B. E. PORTER.

Principal breeds of horses, cattle, sheep and hogs; their uses and adaptation; principles and practice of stock breeding; stock judging.

This section includes a thorough course in the judging of farm live stock, especially dairy and beef cattle. The student is taught by actual handling of the stock and the use of the score card, to correctly select animals for different purposes and to accurately gauge their value for their special purpose.



A CLASS IN STOCK-JUDGING.

VII.—Dairying—Forty Hours.

MR. B. E. PORTER.

The dairy instruction will consist of lectures on bacteriology, and the necessary precautions to insure a good product; lectures on the obtaining of cream from the milk, comparing the old gravity process and the use of separators; on milk testing with the Babcock

test, and the place of the test in modern dairying, and on butter making with the use of the acid test, which practically insures the making of good butter. The lectures on milk testing and butter making will be supplemented by practical instruction, and each student will be required to handle the Babcock test as well as the separator and the churn.

VIII.—Horticulture.—Forty Hours.

PROF. W. N. HUTT.

A discussion of the fundamental principles of fruit and vegetable growing, orchard cultivation, fertilization, pruning, grafting, packing and marketing of fruits. The construction and management of hotbeds, cold frames and the propagation of plants. These lectures will be supplemented by practical work in green houses and orchards.

IX.—Veterinary Science.—Forty Hours.

S. S. BUCKLEY, D. V. S.

An elementary study of the diseases of live stock should be made by every one having charge of domesticated animals. Frequently farm animals become a source of considerable loss through neglect or unintelligent management, when out of condition.

While the treatment of sick animals should rest with veterinarians, trained in such work, yet the owner or manager must know when such services are needed and how to carry on such treatment intelligently, when directed by the veterinarian. The effort is made in the following course of lectures to prepare the student with such knowledge, and to enable him the better to understand the bulletins, reports and treatises upon veterinary subjects, which he may possess:

1. Nutrition.
2. Diseases due to Mistakes in Feeding.
3. Infectious Diseases.
4. Cattle and their Common Diseases.
5. The examination of a Horse for Soundness.

6. Lameness.
7. The Foot—Its Care and Shoeing.
8. Bandages and Dressings.
9. The use of Medicines and Minor Operations.

X.—Tobacco.—Five Hours.

PROF. H. J. PATTERSON.

The plant bed, culture, harvesting, curing, marketing, and effects of fertilizing elements upon the quality.

XI.—Plant Physiology and Pathology.—Fifteen Hours.

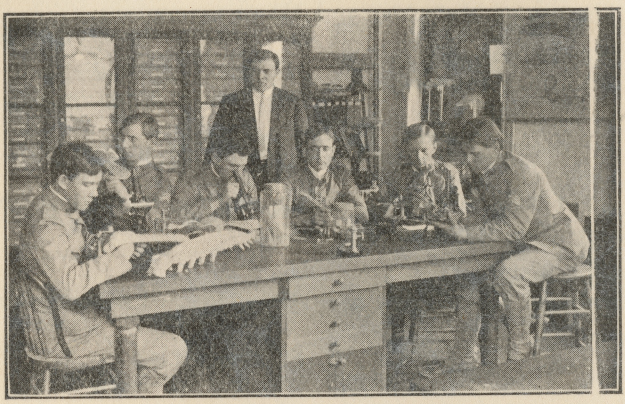
PROF. J. B. S. NORTON.

Five lectures on the general principles of plant life and structure; how plants live, grow and reproduce, and how they are influenced by different conditions of light, temperature, moisture and other factors in their surroundings; considered with special reference to agricultural problems. Five lectures on the causes, symptoms and treatment of plant diseases, with practice work in examination, and study of diseased plants, and the preparation and use of remedies and preventatives.

This course will include the discussion of the laws of plant life, the uses and structure of plant parts, nutrition, growth, formation of products by the plant, reproduction by seeds and otherwise, seed testing, useful plants, weeds, poisonous plants, geographical distribution, variation, acclimatization, cause of diseases, parasitic fungi, preparation of fungicides and spraying.

XII,—Economic Entomology.—Twenty Hours.

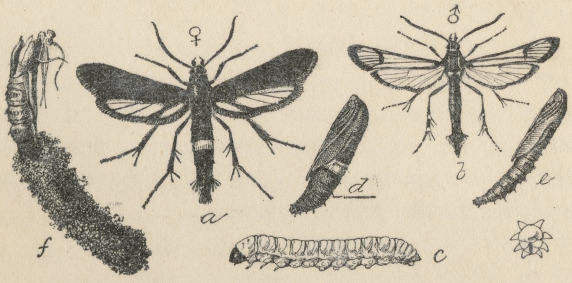
PROF. THOS. B. SYMONS.



A CLASS IN ENTOMOLOGY.

These lectures will treat of the characters of insects in their relation to the methods of combating them, together with concise considerations of the life history and habits of some of the more important insects with which the farmer and fruit grower have to deal.

Attention will also be given to the making and application of insecticides.



The Peach Tree Borer. a, adult female; b, adult male; c, full grown larva; d, female pupa; e, male pupa; f, pupa skin extended partially from cocoon; all natural size (after Marlatt, Cir. No. 17, S. S. Div. Ent. U. S. Dept. Agri.).

XIII.—Carpentry and Blacksmithing.—Fifty-five Hours.

PROF. J. C. BLANDFORD.

A knowledge of this is very important to the agriculturist of this day. The equipment for this instruction is complete. The industrious, eager seeker after knowledge will accomplish much in the line of this work in the time allotted.

1. Sharpening of tools.
2. Adjustment of tools.
3. Sawing, Planing, Chiseling and Boring.

Practical Lessons in Blacksmithing.—Mechanism of, and care of forge and smith's tools. Preparation of forge for fire. Building and managing the fire and fluxes. Forging, bending, welding.

XIV.—Farm Accounts.—Twelve Hours.

PROF. H. T. HARRISON.

A simple, concise and accurate method of keeping farm accounts. Business methods are as necessary to the successful farmer as to the merchant. Neither can do without a practical knowledge of book-keeping.

XV.—Road Construction and Leveling.—Five Hours.

PROF. HENRY LANAHAN.

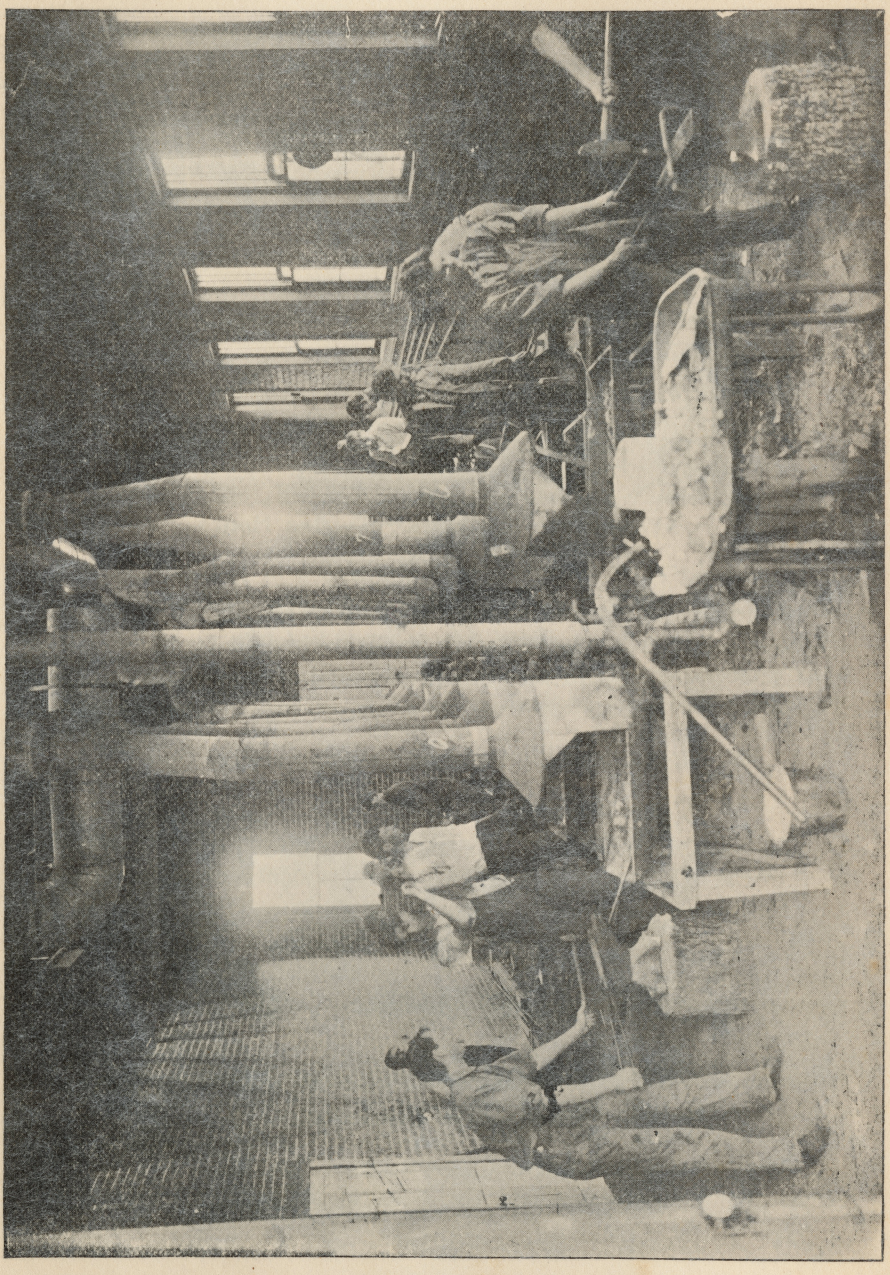
A brief treatment of the principles involved, and the methods used in the location, construction and maintenance of country roads.

An opportunity will be given those desiring it to learn the use of the level in laying out drains, etc. Students wishing to take the work in leveling must report to the instructor in charge within two weeks after the opening of the term.

XVI.—Civil Government.—Ten Hours.

PROF. F. B. BOMBERGER.

The general principles of government; the rights and duties of citizens, and an inquiry into the political institutions of Maryland.



IN THE FORGE SHOP.

THE SELECTION OF DAIRY CATTLE.

B. E. PORTER.

Few things contribute more to a dairy farmer's success than skill in selecting and breeding his dairy stock. Some men possess this skill in a high degree intuitively; others acquire it by careful observation and long continued experience; others, again, never can or do obtain it. But, however it may come into a man's possession, it is no mean element in his success. Any one who has fed and milked a number of dairy cows can tell you which one in his herd is the best milker, but very often, however, when this same man wishes to replenish his herd with other cows like his best one, he experiences difficulty in selecting them. Some dairymen can do it, no doubt, but many others are at a loss because they are not acquainted with the correlation which exists between form and function. Too little attention has been paid to the relations existing between external form of the animal and its internal and more obscure characteristics, upon which its value in a great measure depends.

Every part of the external conformation should be associated in the mind with the correlated peculiarities of structure that give the greatest value to the animal for some particular purpose

The bull-dog, because of his great strength of jaw and thick muscular neck, is enabled to meet and dispatch animals which are fierce and savage, while the greyhound, on account of his slight rangy form attacks only those animals which show little or no fight, and furthermore is enabled to capture prey which is too swift and fleet for the bull-dog.

The draft horse pulls heavy loads, the roadster travels many miles in a short time, the beef animal produces a large quantity of choice meat and the dairy cow produces a large quantity of milk, because each has a specialized structure of form.

When selecting dairy cows, utility is the primary object. With this in mind, men who have made a thorough study of the dairy

animal are now willing to acknowledge and recognize that she is possessed of a type peculiar to herself. This type, for maximum utility is not very beautiful. The dairy cow does not have the smooth, graceful, rounded form of her sister—the beef cow—but has sharp points about her structural anatomy which give her a lean and bony appearance. Yet, aside from this peculiarity of type, she should be stylish, active and attractive in appearance.

A good dairy cow should have the appearance of a cow and not that of the opposite sex; she should have a truly feminine look and a gentle, meek disposition. Preference should be given to cows with small bones, fine and slender limbs, and a tail which is fine at the base; a small but long head, broad between the eyes, but narrowing towards the horns; the horns themselves of a bright color, tapering finely and glistening; a supple and soft, unctuous skin, covered, even on the forehead, with a fine, glossy, soft hair; an eye which is clear, bright and prominent, though placid and mild, and a form which is wedge-shaped, set low to the ground and has a straight, strong top line.

Certain color markings may tickle the eye of the buyer and facilitate sales, but it cannot be said, nor is it true that a cow, because she is red, will give more milk and do better than one which is white, brindled or spotted.

Strictly speaking the cow is simply a machine for the conversion of crude food materials into milk for her young. The dairy-cow, likewise can be considered a machine with a strong overruling predisposition or tendency to turn the food which she consumes toward the production of milk with a high content of solids, especially butter fat, as against the tendency so often seen to turn food into flesh and fat. With this constitutional predisposition, she must have a large mouth, with a well set jaw and a large, spacious barrel, for unless she consumes large quantities of food, her owner cannot hope for large returns.

When selecting animals, especially for long service, like the dairy cow, it is very important that they should have abundant vital power, which is called "constitution." Constitution is best indicated by large spreading nostrils, a deep and long chest with a wide floor, strong abdominal walls and a full development of the

navel, showing that the animal when in a prenatal state was abundantly nourished by the mother, through a well developed umbilical cord.

The quality of the skin, hair and bones is in direct relation to the endurance of the cow. If the skin covering the external region is soft, fine and pliable, it indicates that the secretions are healthy, and it would seem natural that the lining of the stomach would be in the same state, and if such is the case, digestion goes on better, thus increasing endurance.

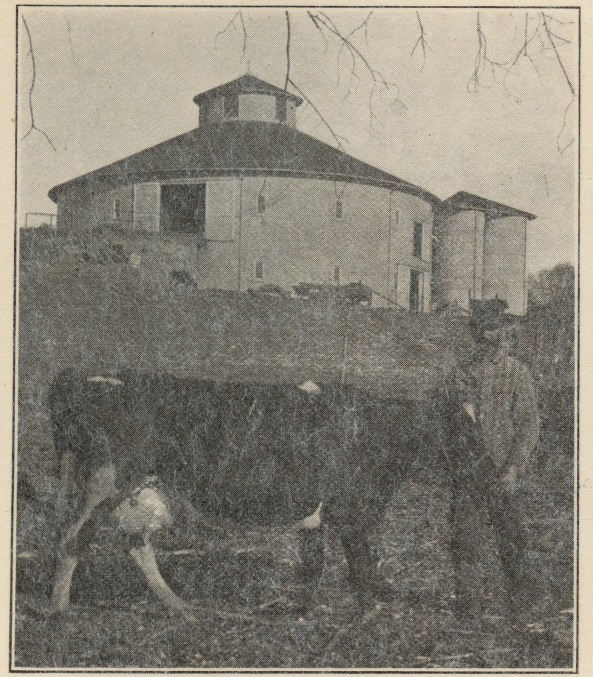
In the dairy cow, the udder is an important organ, for it directly performs the work of making milk, which is the dairy cow's specialty.

This organ should be as large and capacious as the anatomy of the cow will allow, but it should not be heavy and fleshy, yet should have some substance when empty. The udder should be covered with a loose, pliable skin and fine hair. Of course no one cares to milk a cow with short teats, or one with unduly large teats, necessitating the use of both hands to each teat.

Of all marks for ascertaining good cows, the best are afforded by the blood vessels. If the veins which surround the udder are large, widening and varicose, they show that the glands receive much blood, and consequently, that their functions are active and that the milk flow is abundant. The milk veins extending forward along the body from the udder, should be large, branching, and tortuous, and enter the body by many milk wells. The character of these veins, together with the escutcheon, shows the milk-producing capacity of the cow.

In conclusion it is well to remember that a good dairy cow should present a good appearance, be possessed of the proper conformation, have strong constitution, much quality and refinement, and show external evidences in the udder, escutcheon and milk veins, of a skilled workman and an excellent performer.

TYPES OF DAIRY COWS.



A GOOD TYPE.

A POOR TYPE.

THE SCORE CARD IN STOCK JUDGING.

Experience has demonstrated that there is no greater aid in the study of the relation between animal form and function, than a well balanced score card in which the points of an animal are taken up and considered one by one and each given its due weight in determining the animal's tendencies.

The professional stock judge uses no score card, it is true; nor, if he be an expert, does he need one. His trained perception takes in at a glance all the points of an animal from muzzle to tail, and his trained judgment almost instantly sums up the good and the bad and fixes the grade. With the average man, the case is different. His ideas of what constitute good and bad form are hazy and undetermined, because he depends too much on general appearance. Having never observed the close relationship which exists between form and product, whether that product be milk, flesh or energy his judgment of the value of a given animal is apt to be uncertain and lacking in discrimination.

At best he judges, by comparing with animals with which he is himself familiar, all of which may be very faulty. He has in mind no fixed type, no fixed standard of perfection by which to judge, and his judgment, therefore, lacks accuracy. For such an one, the score card will be found most helpful, in fact, indispensable. By its aid, the study of animals becomes a science based on cause and effect and from which "guessing" is eliminated.

At the Maryland Agricultural College great attention is paid to stock judging in all the ordinary branches of farm livestock. The sub-joined score card has been used by the students of the College for several years in judging dairy cows, and the results obtained have shown how valuable and practical an aid it is in this class of work.

This is not a breed score card but applies to dairy cattle of any breeding. It will be observed that the total value of the points on the card foot up to one hundred. This represents perfection, which is never found in fact, but should exist in the mind of every judge. A good cow, one that makes three hundred pounds of butter a year, should score about 85 points out of the hundred.

The score card is almost self-explanatory, but a few additional explanations may be helpful.

WEIGHT IN POUNDS.—The weight of a good dairy cow may vary from 700 to 1200 pounds.

SIZE.—The cow to do her best should be fully developed and have reached maturity.

STYLE.—Style depends upon the nice adjustment of all the parts of the frame work.

QUALITY.—As shown by the character of the skin and hair is an index to the internal organization.

TEMPERAMENT.—The cow should not be easily excited nor should she be sluggish in disposition.

EYE.—This organ can be relied upon as an index of the health and disposition.

PELVIC ARCH.—It is through this arch that the calf is born, and therefore it should be large so that calf-birth will be easy.

BONES.—Refinement should be shown in the bone, but not so much as to give the appearance of weakness.

CHEST.—A cow with a wide deep chest, with a large heart girth has, therefore, a large lung capacity for the purification of the blood.

FALSE RIBS.—These, sometimes called floating rigs, are the ribs which are not attached to the sternum bone.

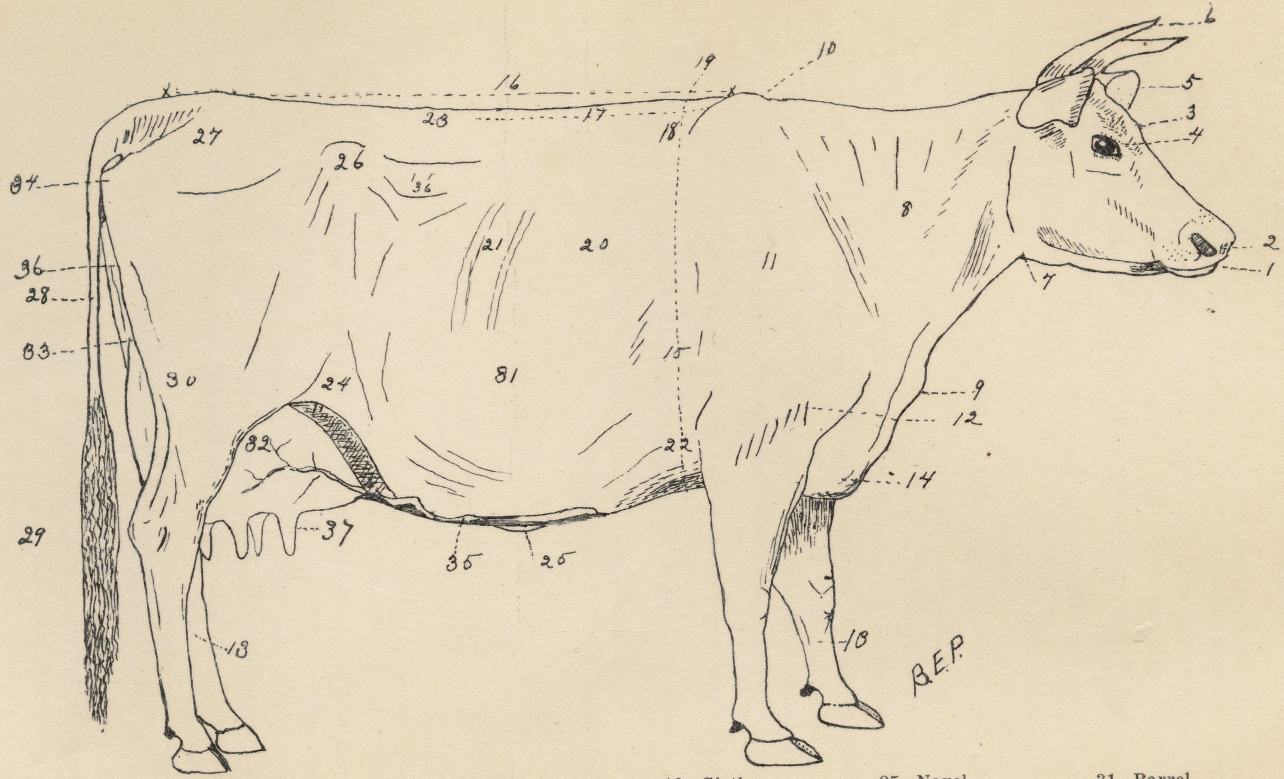
ESCUTCHEON.—Viewing the thighs and the region of the cow above the udder, it will be noticed that on this part the hair runs in the opposite direction to that inclining on the other parts of the body. Where it does this, it is known as the escutcheon. It is supposed that the reason for this hair growing in the direction mentioned is due to the artery which passes this part.

MILK VEINS.—When these organs are large and tortuous, they indicate a large amount of blood flowing through the udder, and blood is the material from which milk is made.

SKIN.—If the secretions of the skin are plentiful and healthful, it may be expected that the secretions in the rest of the body are going on vigorously.

TWIST.—The space behind, between the thighs. In the dairy type the twist is "open" or deeply hollowed out on account of the thighs being thin. In the beef type the twist is full, owing to the full development of the thighs, so that the tail hanging vertically often rests against that portion of the body.

SCORE CARD FOR DAIRY COWS—SCALE OF POINTS.	Perfect Score.	Stud'ts Score.	Corrected.
I. Primary considerations—16 points.			
Weight in pounds, estimated....., corrected.....			
Size and substance for age.....	3	.....	.....
Style, attractive, sprightly; breeding apparent.....	4	.....	.....
Appearance, wedge-shaped viewed from front, side, rear and above; angular.....	4	.....	.....
Quality: skin thin, loose, elastic, mellow; flesh firm; hair soft, fine and silky.....	5 — 16	.....	.....
II. Nervous energy—23 points.			
Temperament, active, controlled.....	5	.....	.....
Eyes, large, clear, bright, mild, placid, free from white.....	3	.....	.....
Forehead, broad, high, face dished.....	3	.....	.....
Ears, broad, thin, active.....	2	.....	.....
Spinal column, long, prominent, open.....	4	.....	.....
Milk veins, branching, long, tortuous.....	4	.....	.....
Navel, large, defined.....	2 — 23	.....	.....
III. Structural anatomy—18 points.			
Contour, clean-cut, smooth, correlated, symmetrical, free from patchiness and offal.....	2	.....	.....
Head, medium in size; muzzle refined; mouth large; face lean and long.....	1	.....	.....
Neck, fine, medium length, flat on side; throat clean; dewlap light.....	1	.....	.....
Withers, narrow on top, spreading; shoulder light and slanting.	1	.....	.....
Back, straight, strong, well muscled.....	2	.....	.....
Loin, broad and strong.....	3	.....	.....
Pelvic arch, prominent, bare; pin bones high, wide; hips wide, prominent.....	4	.....	.....
Flank, high; twist open; thigh thin and incurved.....	2	.....	.....
Bones, medium; joints fine, flat; horns small, waxy; tail long, slim.....	2 — 18	.....	.....
IV. Digestion and assimilation—23 points.			
Nostrils, medium-size, clear and bright.....	1	.....	.....
Breast and brisket, prominent, angular but not pointed.....	1	.....	.....
Chest, wide, deep, long; heart girth large.....	6	.....	.....
Barrel, medium long, broad on top, deep, capacious.....	9	.....	.....
Ribs, flat, spaced, well sprung; chine open.....	3	.....	.....
False ribs, suppressed; barrel depression marked.....	3 — 23	.....	.....
V. Milk indications—20 points.			
Udder, long, capacious, balanced, well up behind, free from fleshiness but with some substance when empty, strongly attached; teats of good size and evenly placed.....	10	.....	.....
Escutcheon, spreading over thighs, extending well upward.....	3	.....	.....
Milk veins, large, tortuous, long and branched; milk wells large.	6	.....	.....
Skin of ear and udder yellow; secretions yellow and plentiful....	1 — 20	.....	.....
TOTAL.....	100		
VI. Obvious and deductive defects.			
Per cent. of perfection.....	.....	.....	.....



1. Mouth.
2. Nostril.
3. Forehead.
4. Eye.
5. Ear.
6. Horn.
7. Throat.
8. Neck.
9. Dewlap.
10. Withers.
11. Shoulder.
12. Arm.
13. Cannon.
14. Brisket.
15. Chest.
16. Top Line.
17. Back, or Chine.
18. Crops.
19. Girth.
20. Ribs.
21. False ribs.
22. Fore flank.
23. Loin.
24. Hind flank.
25. Navel.
26. Hip.
27. Rump.
28. Tail.
29. Switch.
30. Thigh.
31. Barrel.
32. Udder.
33. Escuthcheon.
34. Pin bone.
35. Milk veins.
36. Twist.

37. Teat.

.....P. O.

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Dear Sir:

I hereby apply for admittance to the Short Winter Course in Agriculture at the Maryland Agricultural College and Experiment Station, commencing January 16th, 1905.

I expect to enter on.....

Name.....

County.....

President
Maryland Agricultural College,
College Park, Maryland.